

Remarks

In view of the above amendments and the following remarks, reconsideration of the rejections and further examination are requested.

The specification has been reviewed and revised to update the reference to Application No. 09/696,953 to include the corresponding patent number, and to correct typographical errors pointed out in the Office Action. No new matter has been added by the revisions. As a result, withdrawal of the objection to the specification is respectfully requested.

Claims 1, 2, 4-7, 9-12, 14 and 15 have been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 5, 6, 9 and 10 of U.S. Patent No. 6,687,665. Enclosed herewith is a Terminal Disclaimer linking the present application to U.S. Patent No. 6,687,665. As a result, withdrawal of the obviousness-type double patenting rejection is respectfully requested.

Claims 3, 8 and 13 have been indicated as containing allowable subject matter. The Applicants would like to thank the Examiner for this indication of allowable subject matter.

Claim 3 has been amended so as to include the limitations of its respective base and intervening claims. As a result, claim 3 is allowable.

Claims 1, 2, 6, 7, 11 and 12 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Munsell (US 5,839,099) in view of Cohrs (US 5,960,393).

Claims 1, 6 and 11 have been amended so as to further distinguish the present invention from the references relied upon in the above-mentioned rejection.

Further, claims 1-3, 6, 7 and 11-14 have been amended to make a number of editorial revisions thereto. These revisions have been made to place the claims in better U.S. form. None of these amendments have been made to narrow the scope of protection of the claims, or to address issues related to patentability, and therefore, these amendments should not be construed as limiting the scope of equivalents of the claimed features offered by the Doctrine of Equivalents.

It is submitted that the above-mentioned rejection is no longer applicable to the claims for the following reasons.

Claim 1 is patentable over the combination of Munsell and Cohrs, since claim 1 recites a voice pitch normalization apparatus including a voice pitch normalization device operable to change a target voice signal in voice pitch on a predetermined degree basis; and a voice analyzer

operable to calculate probabilities each indicating a degree of coincidence between the target voice signal and a different one of a plurality of words in sample data, and calculate a maximum probability among the probabilities, wherein until the maximum probability is equal to or greater than a predetermined probability, the voice pitch normalization apparatus is operable to cause the voice pitch normalization device to change to the target voice signal in pitch and the voice analyzer to calculate the maximum probability based on the changed target voice signal. The combination of Munsell and Cohrs fails to disclose or suggest these features of claim 1.

Munsell discloses a signal conditioner 10 that conditions a human voice input 12 such that a voice recognition system 18 is able to perform voice recognition on the human voice input 12. The signal conditioner 10 includes a pitch altering circuit 14 and a frequency band pass circuit 16. The pitch altering circuit 14 converts the human voice input 12 into a digital signal with an A/D converter 26 at a rate specified by a first rate control signal 27 and then converts the digital signal back to an analog signal with a D/A converter 32 at a rate specified by a second rate control signal 29. By using the different first and second rate control signals 27 and 29, the pitch altering circuit 14 is capable of altering the pitch of the human voice input 12. The frequency band pass circuit 16 then receives the human voice input 12 with the altered pitch. The frequency band pass circuit 16 filters the human voice input 12 and then outputs the filtered human voice input 12 to the voice recognition system 18. (See column 3, lines 42-50; column 4, line 61 – column 5, line 14; column 6, lines 4-11 and 32-38; and Figures 1 and 2).

As discussed above, Munsell does disclose that the signal conditioner 10 includes the pitch altering circuit 14 that alters the pitch of the human voice input 12 prior to inputting the human voice input 12 into the voice recognition system 18. However, it is apparent that the signal conditioner 10 does not calculate a maximum probability among probabilities, wherein until the maximum probability is equal to or greater than a predetermined probability, the target voice signal is changed in pitch and the maximum probability is calculated based on the changed target voice signal. As a result, Cohrs must disclose or suggest these features in order for the combination of Munsell and Cohrs to render claim 1 obvious.

Cohrs discloses a variable criteria speech recognition technique whereby one or more recognition criterion are selected manually by a user. A selected utterance is then compared to one or more models of speech to determine a similarity metric for each comparison. The model of speech which most closely matches the utterance is determined based on the one or more

similarity metrics. The similarity metric corresponding to the most closely matching model of speech is then analyzed to determine whether the similarity metric satisfies the selected recognition criteria. (See column 1, line 18 – column 2, line 7).

As discussed above, Cohrs does disclose comparing the utterance to one or more models of speech to determine a similarity metric, determining the model of speech which most closely matches the utterance based on the similarity metric, and analyzing the similarity metric to determine whether it satisfies the selected set of recognition criteria. However, Cohrs fails to disclose or suggest that the utterance is changed in pitch or that a maximum probability is calculated based on a change in pitch of the utterance, until the maximum probability is equal to or greater than a predetermined probability. Therefore, Cohrs fails to address the above-discussed deficiencies of Munsell. As a result, claim 1 is patentable over the combination of Munsell and Cohrs.

As for claim 6, it is patentable over the references relied upon in the rejection for reasons similar to those set forth above in support of claim 1. That is, claim 6 recites, in part, a voice pitch normalization device, and a voice analyzer operable to calculate probabilities each indicating a degree coincidence between a target voice signal and different one of a plurality words in sample data, and calculate a maximum probability among the probabilities, wherein until the maximum probability is equal to or greater than a predetermined probability, the voice recognition device is operable to cause the voice pitch normalization device to change the target voice signal in pitch and the voice analyzer to calculate the maximum probability based on the changed target voice signal, which features are not disclosed or suggested by the references.

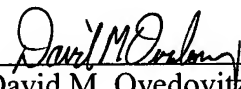
As for claim 11, it is patentable over the references for reasons similar to those set forth above in support of claim 1. That is, claim 11 recites, in part, changing a target voice signal in voice pitch, calculating probabilities each indicating a degree of coincidence between the target voice signal and a different one of a plurality of words in sample data, and calculating a maximum probability among the probabilities, wherein until the maximum probability is equal to or greater than a predetermined probability, the changing of the target voice signal comprises changing the target voice signal in pitch, and the calculating of the maximum probability comprises calculating the maximum probability based on the changed target voice signal, which features are not disclosed or suggested by the references.

Because of the above-mentioned distinctions, it is believed clear that claims 1-15 are allowable over the references relied upon in the rejection. Furthermore, it is submitted that the distinctions are such that person having ordinary skill in the art at the time of invention would not have been motivated to make any combination of the references of record in such a manner as to result in, or otherwise render obvious, the present invention as recited in claims 1-15. Therefore, it is submitted that claims 1-15 are clearly allowable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. The Examiner is invited to contact the undersigned by telephone if it is felt that there are issues remaining which must be resolved before allowance of the application.

Respectfully submitted,

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